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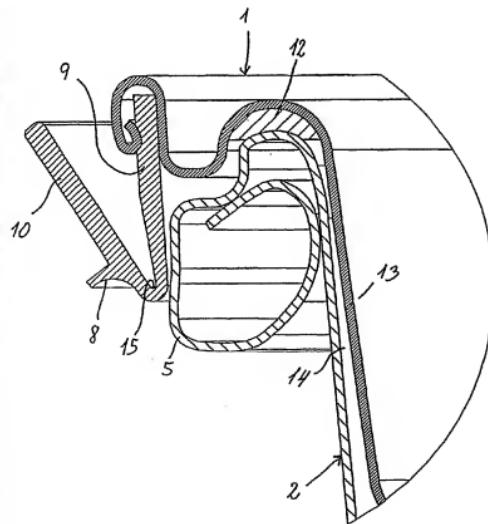
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(54) Title: A RELOCKABLE CLOSURE FOR A CONTAINER



(57) Abstract: The present invention relates to a relockable closure (1) for a container, in particular for metal containers for storage of e.g. chemicals/solvents. The relockable closure comprises a non-plastic cover (e.g. a metal cover) (3) covering the opening of the container and a non-metallic skirt (e.g. a plastic skirt) (4) a part of which is foldable between a locking position and a unlocking position. When the foldable part of the skirt is in the locking position, locking means (8) of the skirt engage a curl portion or a projection the container.

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A RELOCKABLE CLOSURE FOR A CONTAINER

The present invention relates to a relockable closure for a container, in particular for metal containers for storage of e.g. chemicals/solvents.

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Background of the invention

Storing of chemicals or other liquids comprising solvents requires a non-plastic container so as to avoid leakage due to the solvents dissolving of the material of the container. In 10 particular, oil-based paint needs to be stored in a non-plastic container, such as a metal container. Opening of a metal container is very difficult, as it often requires a sharp-pointed article (e.g. a screwdriver) that can be stuck in between the cover and container so as to lift the cover. Further, the closing of such container requires a relative high pressure on the cover (or even use of a hammer) in order to press the cover tightly into 15 the opening of the container.

From prior art it is known to provide a bendable skirt portion on a cover and which extends downwards along the outer surface of the container, and which has a rib that engages with an edge of the container so as to lock the cover to the container. However, the known 20 covers with such a skirt only relate to plastic containers and plastic covers, which are not applicable for oil-based paints, solvent-based paints, solvents, etc. These covers are described in e.g. DK 145 194, US 3,688,942, SE 507 510, SE 469 794, WO 88/03901, EP 0 245 894 and EP 0 412 231.

25 Description of the invention

It is an object of the present invention to provide a relockable non-plastic closure for a container and which is easy to fit and refit without the need of any kind of tool.

30 According to a first aspect, the present invention relates to a relockable closure for a container having a sidewall terminating in a peripherally extending curl portion encircling an opening to be closed, the closure comprising;

- a non-plastic cover covering at least said opening,
- 35 – at least one non-metallic skirt attached to at least a part of a peripheral edge portion of the cover, the skirt extending along said sidewall of said container and having locking means to be engaged with at least a part of said curl portion of the container, so as to lock the closure to the container, and

wherein the skirt comprises a first part attached to the cover and a second part being foldable between a locking position where said locking means engages said curl portion and an unlocking position where said locking means is out of engagement with said curl portion.

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The container may have a sidewall with one or more peripherally outwardly extending projections and terminating in a peripherally extending curl portion encircling an opening to be closed. In that case the closure may according to a second aspect comprise;

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- a non-plastic cover covering at least said opening,
- at least one non-metallic skirt attached to at least a part of a peripheral edge portion of the cover, the skirt extending along said sidewall of said container and having locking means to be engaged with at least a part of said curl portion of the container and/or said one or more projections, so as to lock the closure to the container, and

15

wherein the skirt comprises a first part attached to the cover and a second part being foldable between a locking position where said locking means engages said curl portion and/or projections and an unlocking position where said locking means is out of

20

engagement with said curl portion and/or projections.

The container and cover may be cylindrical, oval or elliptical, or it may be a polygonal container, such as quadrangular or rectangular.

25 The skirt may extend along an outer surface of the curl portion and engage an edge of the curl portion and/or the projections, which may be outwardly extending beads/corrugations in the sidewall of the container.

30 The closure may comprise one non-metallic skirt. In some embodiments the closure may comprise a plurality of non-metallic skirts such as two or three or four or five or six or seven or eight or nine or ten. The non-metallic skirts may be attached to each other or may be detachable from each other e.g. by means of a weakening line in the skirt.

35 Preferably, the skirt comprises a first part attached to the cover and a second part being foldable between a locking position where said locking means engages said curl portion and/or projections and an unlocking position where said locking means is out of engagement with said curl portion and/or projections. Preferably, the skirt comprises a fold line around which the second part may be swung outwards and upwards when going from

the locking to the unlocking position. In the unlocking position, the second part may abut the first part.

Said curl portion may define contact surfaces for said cover and locking means.

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In a preferred embodiment, the locking means comprises a peripherally extending rib engageable with a part of said curl portion and/or projections. The rib may be formed with a curved portion having a radius, which corresponds to the radius of a curved part of said curl portion and/or projection.

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The skirt may comprise a resilient rib, e.g. made of rubber, which engages the part of the curl portion and/projections.

Preferably, the skirt extends continuously along the entire circumference of the container

15 (if the container is cylindrical, oval, elliptical or polygonal), but as an alternative the skirt may consist of two or three or four or more individual skirts, so that the cover is locked to the container by individual non-connected skirts.

At least a part of the locking means may be detachable. E.g. a part of the engaging rib

20 may be detachable. The detachable part of the locking means/engaging rib may be adapted to provide an enhanced engagement with the curl portion or the one or more projections of the container compared to the non-detachable part of the locking means/engaging rib. Thus after removal of the detachable part of the locking means/engaging rib, it may be easier to remove the closure. After the removal of the 25 detachable part it may still be necessary to twist or flip the non-detachable part of the locking means/engaging rib during removal of the closure.

In an embodiment the locking means/engaging rib may comprise a first part and a second part, wherein the engaging surface of a cross-section of the first part is bigger than the

30 engaging surface of a cross-section of the second part. In an embodiment the thickness of a cross-section of the first part may be thicker than a cross-section of the second part. Due to the thicker part, the engaging surface may be bigger or it may be harder to twist the engaging rib past the curl portion or the one or more projections. Said first part may be detachable.

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In an embodiment the closure may comprise gripping means adapted to make it easier for the user to remove the closure. The gripping means may serve as a handgrip and the position of the hand grip may result in enhanced or reduced engagement between the closure and the container. The gripping means may also be adapted to make it easier to

attach the closure to the container. The closure may comprise one or two or more gripping means. The gripping means may be adapted to be used as handles during transportation of the container.

- 5 In order to make it easier to fold the skirt between its locking and unlocking position said skirt may comprise one or more peelable perforations extending transverse to the circumferential direction of the skirt. Thus, the forces required to fold the second part of the skirt become less, when the perforations are peeled off.
- 10 The skirt may also comprise one or more slits (not perforated) extending transverse to the circumferential direction of the skirt.

Preferably, the slits and/or perforations extend in the second part of the skirt only, but they may extend in both the first and second part of the skirt.

- 15 The word "attached" may comprise that the skirt can be seamed to the cover, so that the skirt is seamed in between two oppositely arranged flanges, or it can be glued thereto, or it may be injection moulded to the cover, or it may be attached to the cover by a combination of any of these attachment methods.

- 20 Alternatively, the skirt may be clicked on to the cover. In that case the skirt may either be fixed or detachable mounted to the cover.

- 25 The cover may comprise a wall portion engageable with an internal surface of the container defined by its sidewall, said wall portion and skirt defining a cavity for said curl portion of the container. The wall portion may be outwardly inclined, so that the wall portion and the internal surface of the container may frictionally engage each other so that the cover is maintained in its position in the opening of the container even if the skirt is not in its locking position.

- 30 In another embodiment, the cover may comprise a plane cover surface extending substantially perpendicular to the sidewall of the container and without extending into the container, so that the above-mentioned wall portion may be dispensed with. In that case the cover may be locked to the container by means of the skirt only.

- 35 The internal surface of the container may comprise corrugations, which prevents a capillary rise of the content in the container so as to avoid the contents to run out of the container.

In order to provide a tight closure for the container, a compound (a material for providing a sealed/tight closure) may be placed between the cover and the container. The compound may e.g. be a rubber band or a band of silicone sprayed on or an elastomer or a soft polymer or a synthetic rubber composite.

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The compound may be placed between the sidewall of the container and said wall portion of the cover, such as inside a corrugation in the sidewall of the container or the wall portion.

- 10 Alternatively or additionally, the compound may be placed between the skirt and the sidewall of the container, such as inside a corrugation in the sidewall of the container or on the second part of the skirt. The compound may e.g. constitute the above-mentioned rib, or the compound may just be attached to said cover or skirt.
- 15 Preferably, the cover is made of metal, but it can be made of cardboard or composites or glass or wood. The skirt is preferably made of a resilient/flexible plastic, such as PELD or PP or PEHD or PET or PMMA or PA or elastomers or rubber.

It may be an advantage of closures with a metal cover that they are inflexible compared to plastic covers. Thus solidified material on an internal surface may not come off in flakes when the closure is detached or re-attached, as metal covers may not be twist or bent to the same extend as plastic covers. At the same time a skirt made of a flexible material may provide the foldable properties of the present application. As the skirt is foldable it may be possible to provide an enhanced engagement between a rib portion of the skirt and 25 an edge of the can. This is due to the fact, that the closure need not to be adapted to be pulled off the can when the rib portion of the skirt and the edge of the can are engaged.

The container may contain foodstuff, solvents, chemicals, paints as the cover provides a tight and lockable closure, but the container and cover may of course also be used for 30 other goods, such as cookies. The container may be made of metal, plastic, composites, cardboard glass or wood.

When taking off the closure from the container, the second part of the skirt may be folded/swung into the unlocking position and subsequently the closure can be lifted away 35 from the container. When fitting/refitting the closure, the second part of the skirt may firstly be swung/folded into alignment with the first part of the skirt and subsequently the closure is slid downwards until the locking means engage the curl portion and/or projection. The method of fitting/refitting the closure to the container may comprise the

conventional method of pressing the closure downwards e.g. by the person filling the container.

The closure is applicable for a lot of known containers having a curl portion, and as the

5 closure can be fitted to such containers by use of conventional production equipment, the closure can be sold separately (not in combination with a container) to manufacturers of containers. As the closure can be sold separately, the packing volume for exportation is reduced to a minimum because the closure can be stacked very close.

10 Instead of aligning the second part with the first part before fitting the closure to the container, the closure may be placed on the opening of the container and subsequently the second part of the skirt is swung/folded into the locking position.

According to a third aspect, the present invention relates to a method for manufacturing a

15 closure for a container having a sidewall terminating in a peripherally extending curl portion encircling an opening to be closed, said method comprising the steps of:

- providing a non-plastic cover having a peripherally extending edge portion defining attachment part(s) for a skirt for locking the cover to the container,

20 - providing a non-metallic skirt, and

- attaching the skirt to said attachment part.

The step of attaching the skirt to the cover may comprise seaming or gluing or clicking the skirt to the attachment parts, or it may comprise injection moulding the skirt to the

25 attachment parts.

The step of providing the skirt may comprise extruding or injection moulding the skirt.

Brief description of the figures

30 Preferred embodiments of the invention will be described in detail below with reference to the accompanying figures, wherein

figs. 1-6 show a cross-sectional view of the closure and container according to the

35 invention,

figs. 7-8 show 3D-views of container and closure according to the invention, and

figs. 9-18 show embodiments wherein a part of the skirt may be detached or changed between two positions.

Detailed description of the figures

Fig. 1 shows a cross-sectional view of the closure 1 and container 2 according to the invention. The closure comprises a metal cover 3 and a skirt 4, which together defines the 5 closure for the container. The container comprises a curl portion with a lower edge 5, a neck portion 6 and an upper edge 7.

The lower edge 5 has a curved portion with a radius substantially equal to the radius of the curved rib portion 8 of the skirt. The skirt comprises a first part 9 attached to the cover 10 and a second part 10, the second part being outwardly foldable (in the direction 11) between a locking position, where the curved rib portion 8 engages the lower edge 5, and an unlocking position where the second part is folded outwards. The second part is foldable around the point 15.

15 The cover comprises a compound 12 that fits tightly to the upper edge 7 of the container so as to provide a sealed closure.

The cover comprises an outwardly inclined wall portion 13 engageable with the internal surface 14 of the container defined by its sidewall, said wall portion and skirt defining a 20 cavity for said curl portion of the container.

Fig. 2 shows a skirt with a bulb portion 16 in the upper part that is attached to the cover. The bulb ensures that the skirt stays attached to the cover.

25 Fig. 3 and 4 show two different embodiments of injection moulding the skirt with the edge portion of the cover. In fig. 4 the cover together with the skirt comprises a smooth rounded edge portion, while the one shown in fig. 3 has an edge with a neck portion.

Fig. 5 shows the same embodiment of the invention as shown in fig. 1, but wherein the 30 second part 10 of the skirt is swung up into an unlocking position. In this position it is possible to lift the closure off the container.

When refitting the closure to the container, the second part is firstly swung back into alignment with the first part, and the closure is then placed above the container and slid 35 downwards until the curved rib portion 8 goes into engagement with the lower edge 5.

Fig. 6 shows an embodiment where the cover, instead of the above-mentioned outwardly inclined wall portion extending into the container as shown in figs. 1-5, comprises a plane

surface 13 extending substantially perpendicular to the sidewall 14 of the container. The compound 12 fits tightly to the upper edge 7.

Figs. 7-8 show 3D-views of container 2 and closure 1 comprising a metal cover 3 and a skirt 4. The skirt in fig. 7 comprises slits 17 extending transverse to the circumferential direction of the skirt. The slits allow for an easier folding of the second part of the skirt.

The form of the closure provides that the containers with the closure attached thereto can be stacked on each other.

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Figs. 9a, 9b, 10a and 10b show a closure 1 and container 2 according to the invention. The closure comprises a metal cover 3 and a skirt 4, which together defines the closure for the container. The skirt 4 comprises a detachable part 18 and a non-detachable part 19. A weakening line 20 separates the detachable part 18 and the non-detachable part 19. The 15 parts 18 and 19 may be moulded in one piece. In figs. 10a and 10b the detachable part 18 is detached from the non-detachable part 19. The curved rib portion 8 (not shown) is thicker on the detachable part 18 than on the non-detachable part 19.

A container 2 and a closure 1, comprising a cover 3 and a skirt 4 are shown in figs. 11a, 20 11b, 12a and 12b. The skirt 4 comprises a detachable part 18 and a non-detachable part 19. A weakening line 20 separates the parts 18 and 19. A strip 21 may be pulled in the direction 22 resulting in detachment of the detachable part 18. After said removal the non-detachable part of the skirt comprises a hole 23. A handle 24 may be used to remove the closure from the container.

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Analogously in figs. 13a, 13b, 14a and 14b a strip may be used to remove the detachable part 18 from the non-detachable part 19. When the detachable part 18 is removed the handle 24 may be used to remove the closure. The handle is shaped so as to fit hands of the user.

30

Figs. 15a, 15b, 16a and 16b show a container 2 and a closure 1, comprising a cover 3 and a skirt 4. The skirt comprises a detachable part 18 and a non-detachable part 19. The detachable part is interconnected with a strip 21 by means of a connecting member 25. When the strip has been detached a handle 24 may be used to remove the closure 1 from 35 the container 2.

Figs. 17a and 17b show a container 2 and a closure 1. The closure comprises a skirt 4 and a handle 24 which may be changed between two positions. In fig. 17a the handle is in the first position and in fig. 17b the handle is in the second position. When the handle is in the

first position a curved rib portion 8 engages the lower edge 5 of the curled edge portion. Thus the first position is a locking position wherein the closure may not be removed from the container and the second position is an unlocked position wherein the closure may be removed from the container. The closure may be manufactured such that the handle 24

5 and the skirt 4 are made in to one piece and such that a weakening line 26 is provided between the sides of the handle 24 and the skirt 4. Prior to breaking of the weakening line 26 the handle is retained in the locking position as shown in fig. 17a. When the handle is moved to the second position as shown in fig. 17b the weakning line 26 is broken and the handle 24 may be used to removed the closure.

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Figs. 18a and 18b show a container 2 and a closure 1 comprising a skirt 4. The lower edge 27 of the skirt is wave-shaped. By forming the lower edge as a wave it may be easier for the user to open the can as it may be easier to get a good grip of the skirt when the skirt is to be folded between the locking position and the un-locked position. There may be any

15 number of waves e.g. the distance between each wave may be substantially equal to the distance between fingers of a person. In other embodiments there may be four, five, six, seven, eight, nine or ten waves.

CLAIMS

1. A relockable closure for a container having a sidewall terminating in a peripherally extending curl portion encircling an opening to be closed, the closure comprising;

5

- a non-plastic cover covering at least said opening,
- at least one non-metallic skirt attached to at least a part of a peripheral edge portion of the cover, the skirt extending along said sidewall of said container and having locking means to be engaged with at least a part of said curl portion of the container, so as to lock the closure to the container, and

wherein the skirt comprises a first part attached to the cover and a second part being foldable between a locking position where said locking means engages said curl portion and an unlocking position where said locking means is out of engagement with said curl portion.

15 2. A relockable closure for a container having a sidewall with one or more peripherally outwardly extending projections and terminating in a peripherally extending curl portion encircling an opening to be closed, the closure comprising;

20

- a non-plastic cover covering at least said opening,
- at least one non-metallic skirt attached to at least a part of a peripheral edge portion of the cover, the skirt extending along said sidewall of said container and having locking means to be engaged with at least a part of said curl portion of the container and/or said one or more projections, so as to lock the closure to the container, and

25 wherein the skirt comprises a first part attached to the cover and a second part being foldable between a locking position where said locking means engages said curl portion and/or projections and an unlocking position where said locking means is out of engagement with said curl portion and/or projections.

30 3. A closure according to claim 1 or 2, wherein the skirt extends along an outer surface of the curl portion.

35 4. A closure according to any of claims 1-3, wherein the cover comprises a wall portion engageable with an internal surface of the container defined by its sidewall, said wall portion and skirt defining a cavity for said curl portion of the container.

5. A closure according to any of the preceding claims, wherein the locking means comprises a peripherally extending rib engageable with a part of said curl portion and/or projections, so as to define an engaging surface.
- 5 6. A closure according to any of the preceding claims, wherein said curl portion defines contact surfaces for said cover and locking means.
7. A closure according to any of the preceding claims, wherein a compound is placed between the cover and said curl portion so as to provide a tight closure.
- 10 8. A closure according to any of claims 4-7, wherein a compound is placed between the sidewall of the container and said wall portion of the cover so as to provide a tight closure.
9. A closure according to any of the preceding claims, wherein a compound is placed
- 15 15 between the skirt and the sidewall of the container so as to provide a tight closure.
10. A closure according to any of claims 7-9, wherein the compound is attached to said cover or skirt.
- 20 11. A closure according to any of the preceding claims, wherein the cover comprises metal and/or cardboard and/or composites and/or glass and/or wood.
12. A closure according to any of the preceding claims, wherein the skirt is seamed to said cover.
- 25 13. A closure according to any of claims 1-11, wherein the skirt is injection moulded with said cover.
14. A closure according to any of claims 1-11, wherein the skirt is glued to said cover.
- 30 15. A closure according to any of claims 1-11, wherein the skirt is clicked on to said cover.
16. A closure according to any of the preceding claims, wherein the skirt is made of a resilient plastic, such as PELD, PP, PEHD, PET, PMMA, PA, elastomers or rubber.
- 35 17. A closure according to any of the preceding claims, wherein the closure and container is substantially cylindrical.

18. A closure according to any of the preceding claims, wherein at least a part of the locking means is detachable.
19. A closure according to any of claims 5-18, wherein the engaging rib comprises a first 5 part and a second part, and wherein the engaging surface of a cross-section of the first part is bigger than the engaging surface of a cross-section of the second part.
20. A closure according to claim 18 and 19, wherein the first part of the rib is detachable.
- 10 21. A closure according to any of the preceding claims, wherein the closure comprises gripping means.
22. A closure according to any of the preceding claims, wherein the skirt consists of two or three or four or more individual skirts.
- 15 23. A closure according to any of claims 1-21, wherein the skirt extends continuously along the entire circumference of the container.
24. A closure according to claim 23, wherein said skirt comprises one or more peelable 20 perforations extending transverse to the circumferential direction of the skirt.
25. A closure according to any of the preceding claims, wherein said skirt comprises one or more slits extending transverse to the circumferential direction of the skirt.
- 25 26. A closure according to any of the preceding claims, wherein at least a part of the skirt is detachable from the cover.,
27. A method for manufacturing a closure for a container having a sidewall terminating in a peripherally extending curl portion encircling an opening to be closed, said method 30 comprising the steps of:
 - providing a non-plastic cover having a peripherally extending edge portion defining attachment part(s) for a skirt,
 - providing a non-metallic skirt
 - 35 – attaching the skirt to said attachment part.
28. A method according to claim 27, wherein the step of attaching comprises seaming the skirt to the attachment parts.

29. A method according to claim 27, wherein the step of attaching comprises gluing the skirt to the attachment parts.
30. A method according to claim 27, wherein the step of attaching comprises injection moulding the skirt to the attachment parts.
31. A method according to claim 27, wherein the step of attaching comprises clicking the skirt on to the attachment parts.
- 10 32. A method according to any of claims 27-31, wherein the step of providing the skirt comprises extruding the skirt.

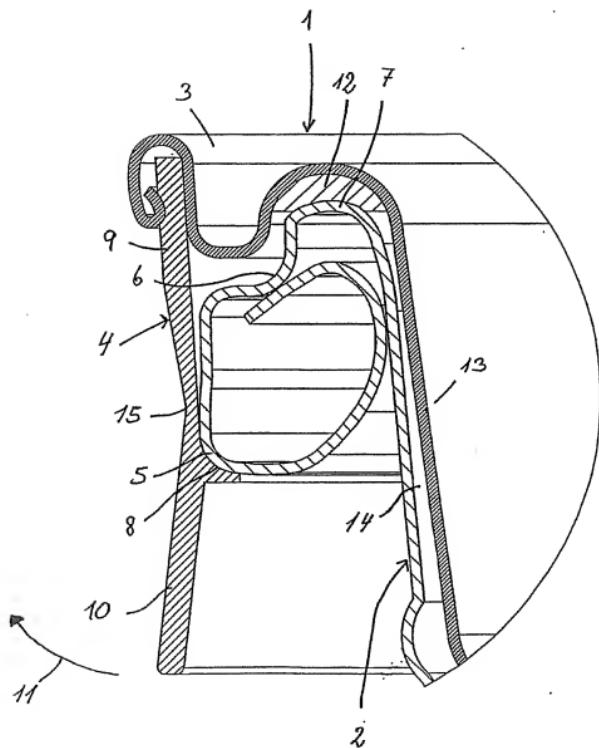


Fig. 1

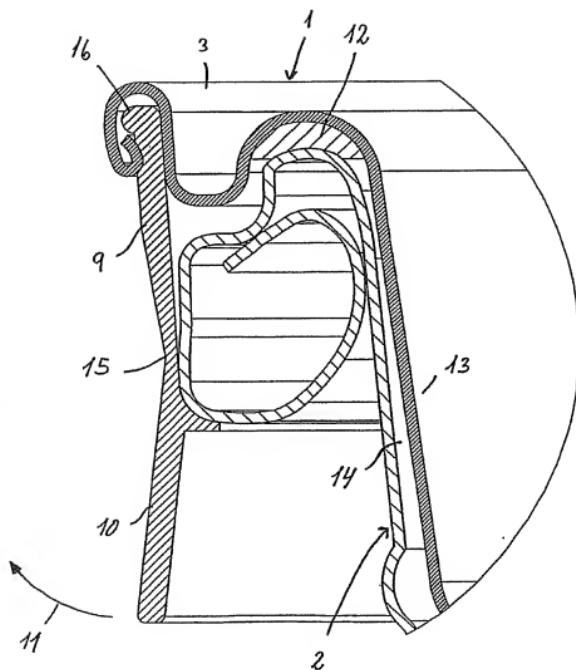


Fig. 2

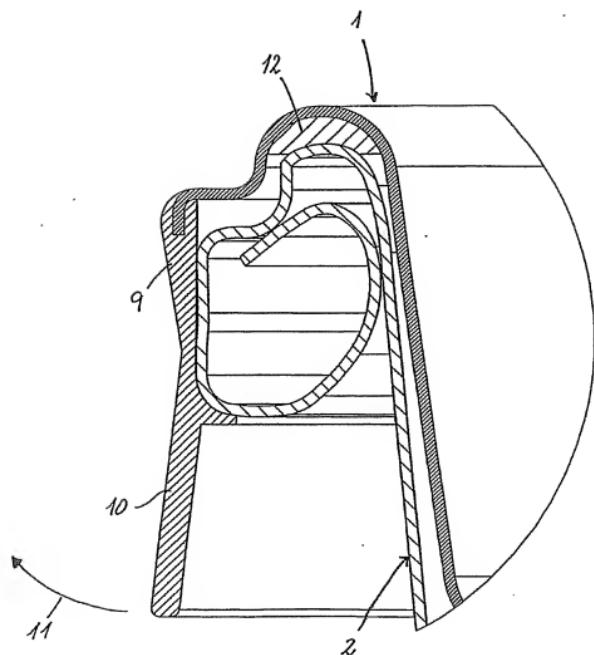


Fig. 3

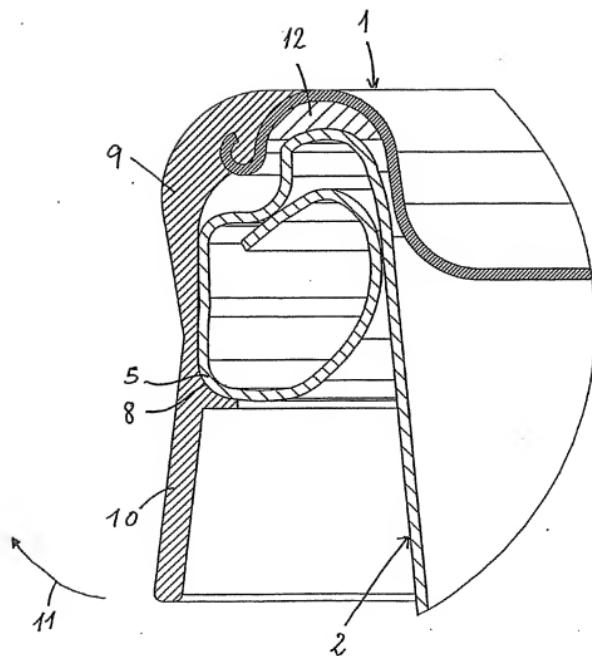


Fig. 4

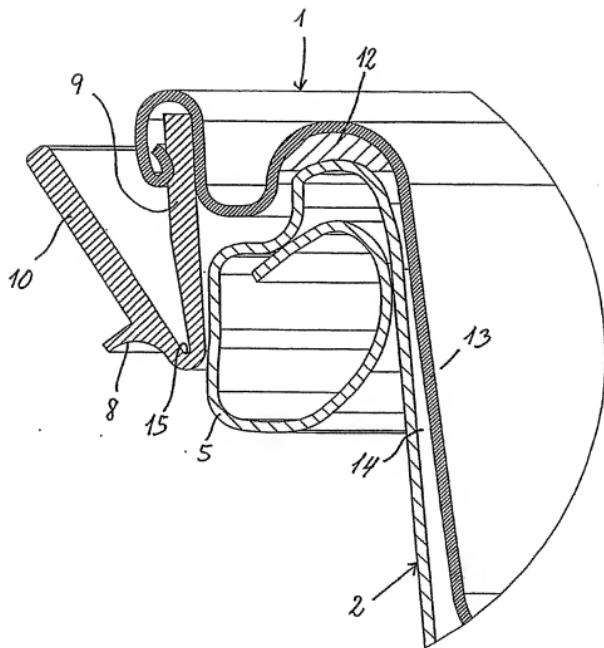


Fig. 5

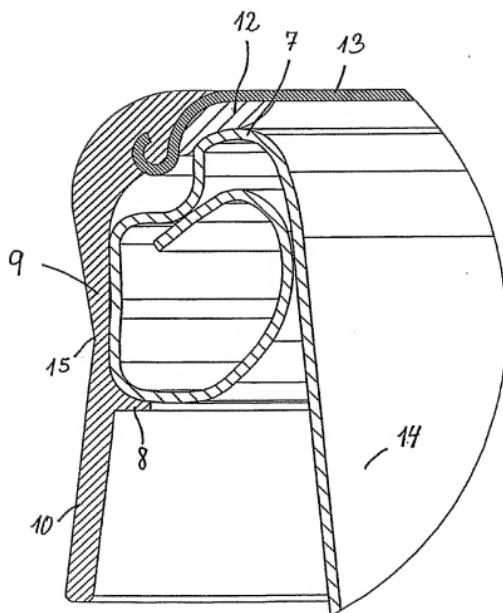


Fig. 6

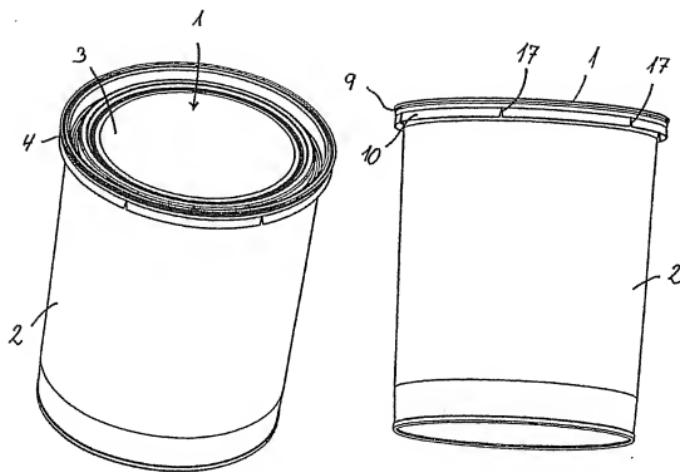


Fig. 7

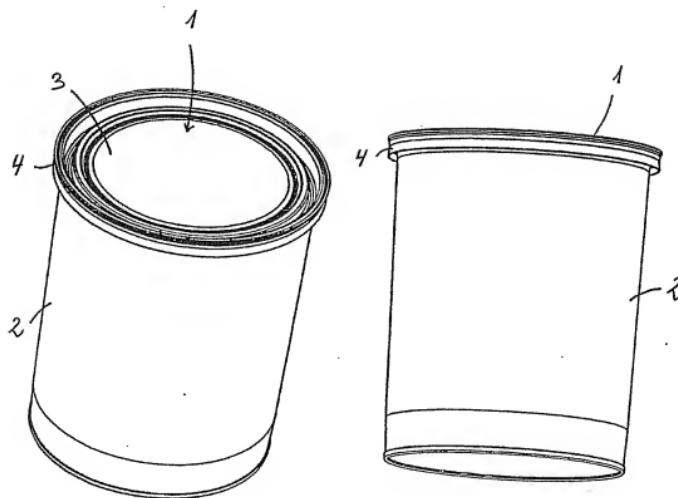
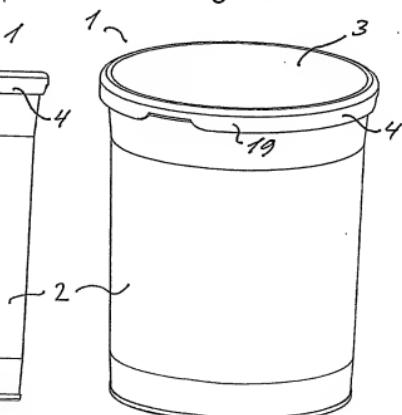
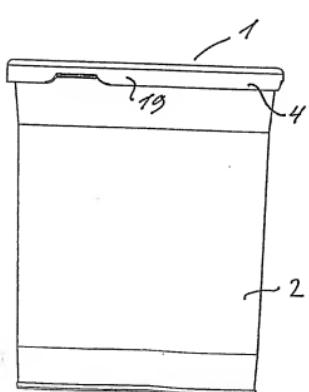
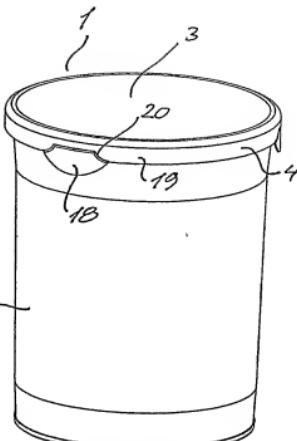
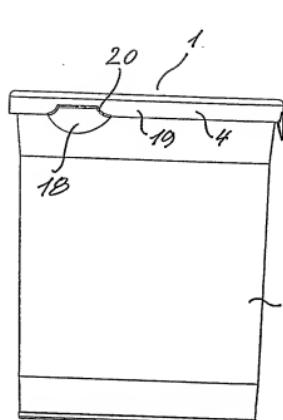


Fig. 8

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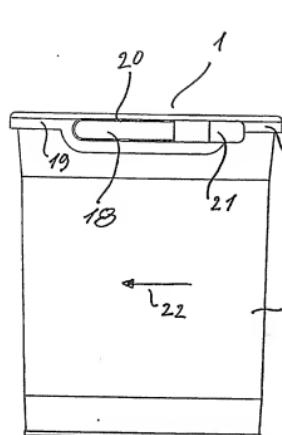


Fig. 11a

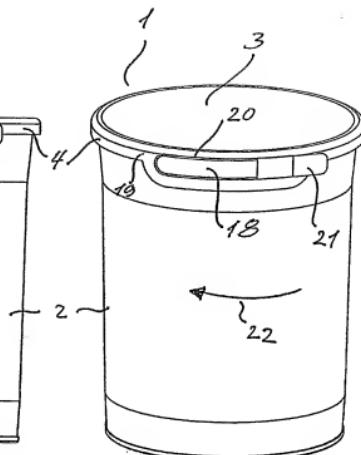


Fig. 11b

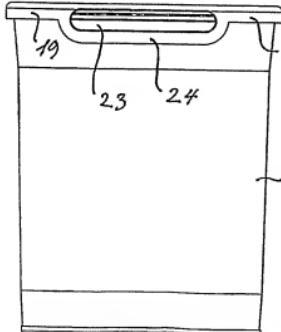


Fig. 12a

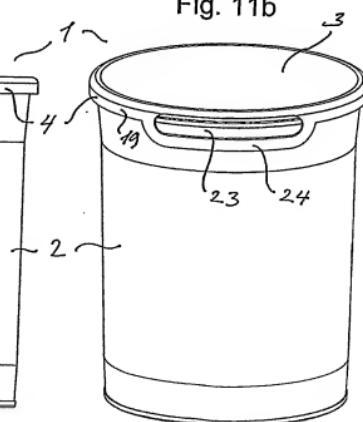


Fig. 12b

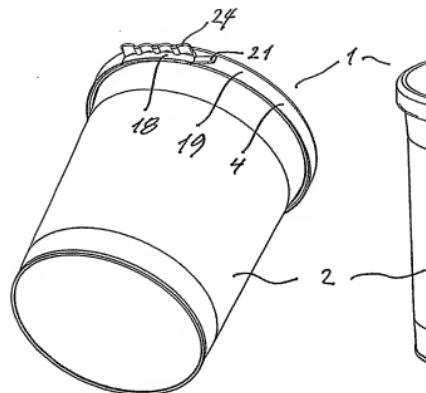


Fig. 13a

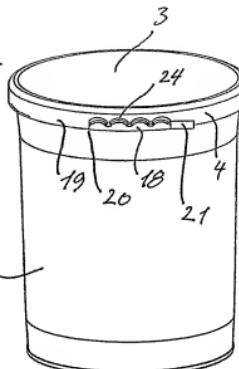


Fig. 13b

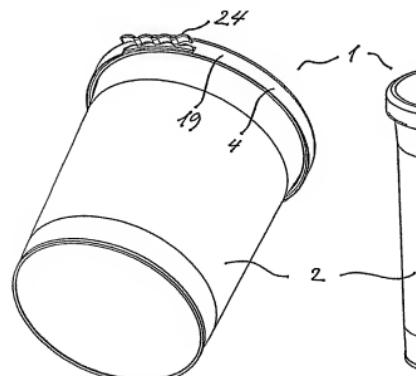


Fig. 14a

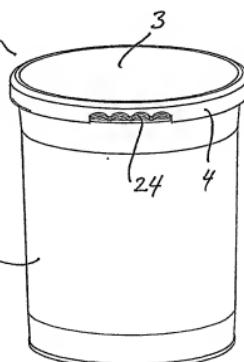


Fig. 14b

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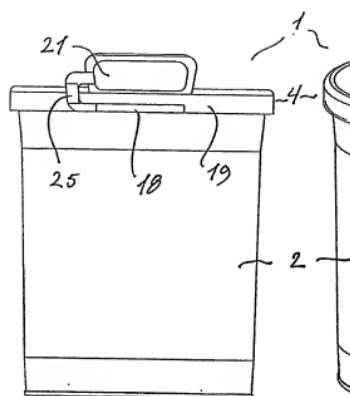


Fig. 15a

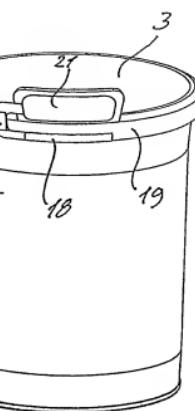


Fig. 15b

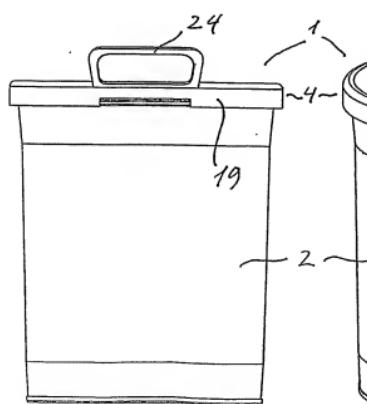


Fig. 16a

Fig. 16b

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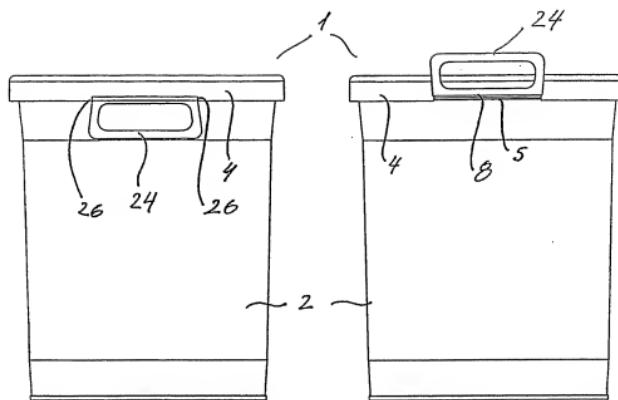


Fig. 17a

Fig. 17b

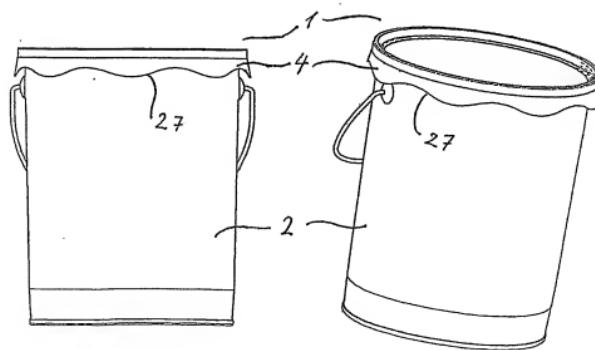


Fig. 18a

Fig. 18b

INTERNATIONAL SEARCH REPORT

International Application No
PCT/DK 03/00043A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65D43/02 B65D45/20

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	<p>EP 1 127 809 A (ALUSUISSE) 29 August 2001 (2001-08-29)</p> <p>column 1, line 46 -column 2, line 9 column 3, line 35 - line 44 column 6, line 32 - line 34 column 7, line 30 - line 38 column 8, line 32 -column 9, line 31 column 10, line 42 -column 11, line 23 column 13, line 49 -column 17, line 18; figures 1-3</p> <p>---</p> <p>-/-</p>	1-3, 5, 6, 11-17, 21-23, 27-32

 Further documents are listed in the continuation of box C. Patent family members are listed in annex.

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A document member of the same patent family

Date of the actual completion of the International search

4 June 2003

Date of mailing of the International search report

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INTERNATIONAL SEARCH REPORT

International application No
PCT/DK 03/00043

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 127 808 A (ALUSUISSE) 29 August 2001 (2001-08-29) column 12, line 49 -column 13, line 43; figures 1-3 ---	1-3, 5, 6, 11-17, 21-23, 27-32
X	FR 2 801 873 A (COREPE) 8 June 2001 (2001-06-08) page 2, line 7 -page 3, line 32; figures 1, 2 ---	1-3, 5, 11, 15-17, 22, 26, 27, 31
X	DE 299 20 915 U (BLECHWARENFABRIK LIMBURG) 10 February 2000 (2000-02-10) page 4, line 16 -page 5, line 24; figures 1, 2 ---	1-6, 11, 13, 16-18, 21, 23, 25, 27, 30
A	US 2 901 140 A (ROBINSON) 25 August 1959 (1959-08-25) column 6, line 25 -column 7, line 4; figures 14-17 ---	1, 2, 27
A	DE 44 29 057 A (HÖRAUF MASCHINENFABRIK) 22 February 1996 (1996-02-22) column 3, line 24 -column 4, line 21; figures 1-4 ---	1, 2, 27
A	US 6 196 451 B1 (HELMS) 6 March 2001 (2001-03-06) column 4, line 43 -column 5, line 50; figures 1-7 ---	1, 2, 27

INTERNATIONAL SEARCH REPORT

Info on patent family members

International application No
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Patent document cited in search report		Publication date		Patent family member(s)		Publication date
EP 1127809	A	29-08-2001	EP EP	1127808 A1 1127809 A2		29-08-2001 29-08-2001
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US 6196451	B1	06-03-2001	AU WO	7736500 A 0126976 A2		23-04-2001 19-04-2001

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(NL).

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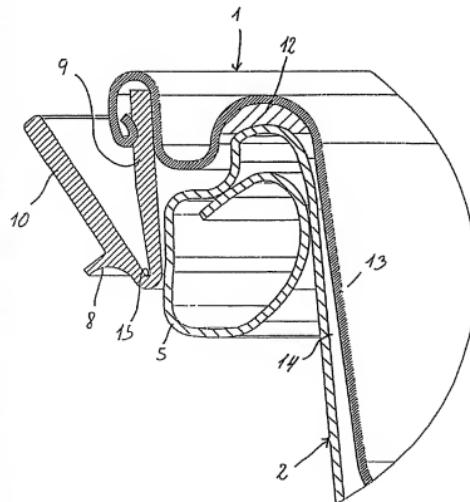
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(30) Priority Data:
60/350,379 24 January 2002 (24.01.2002) US(71) Applicant (for all designated States except US): GLUD
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(54) Title: A RELOCKABLE CLOSURE FOR A CONTAINER



(57) Abstract: The present invention relates to a relockable closure (1) for a container, in particular for metal containers for storage of e.g. chemicals/solvents. The relockable closure comprises a non-plastic cover (e.g. a metal cover) (3) covering the opening of the container and a non-metallic skirt (e.g. a plastic skirt) (4) a part of which is foldable between a locking position and a unlocking position. When the foldable part of the skirt is in the locking position, locking means (8) of the skirt engage a curl portion or a projection on the container.



Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,
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GQ, GW, ML, MR, NE, SN, TD, TG).

— *with amended claims*

Date of publication of the amended claims: 27 November 2003

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— *with international search report*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

AMENDED CLAIMS

[received by the International Bureau on 13 August 2003 (13.08.03);
original claims 1-32 replaced by amended claims 1-34 (4 pages)]

1. A relockable closure for a container having a sidewall terminating in a peripherally extending curl portion encircling an opening to be closed, the closure comprising:
 - a non-plastic cover covering at least said opening,
 - at least one non-metallic skirt attached to at least a part of a peripheral edge portion of the cover, the skirt extending along said sidewall of said container and having locking means to be engaged with at least a part of said curl portion of the container, so as to lock the closure to the container, and

wherein the skirt comprises a first part attached to the cover and a second part being foldable between a locking position where said locking means engages said curl portion and an unlocking position where said locking means is out of engagement with said curl portion.

2. A relockable closure for a container having a sidewall with one or more peripherally outwardly extending projections and terminating in a peripherally extending curl portion encircling an opening to be closed, the closure comprising:

a non-plastic cover covering at least said opening,

- at least one non-metallic skirt attached to at least a part of a peripheral edge portion of the cover, the skirt extending along said sidewall of said container and having locking means to be engaged with at least a part of said curl portion of the container and/or said one or more projections, so as to lock the closure to the container, and

wherein the skirt comprises a first part attached to the cover and a second part being foldable between a locking position where said locking means engages said curl portion and/or projections and an unlocking position where said locking means is out of engagement with said curl portion and/or projections.

3. A closure according to claim 1 or 2, wherein the second part is adapted to be retained in the unlocking position and/or the locking position.

4. A closure according to any of claims 1-3, wherein the second part in some positions is adapted to be biased towards the unlocking position.
5. A closure according to any claims 1-4, wherein the skirt extends along an outer surface of the curl portion.
6. A closure according to any of claims 1-5, wherein the cover comprises a wall portion engageable with an internal surface of the container defined by its sidewall, said wall portion and skirt defining a cavity for said curl portion of the container.
7. A closure according to any of the preceding claims, wherein the locking means comprises a peripherally extending rib engageable with a part of said curl portion and/or projections, so as to define an engaging surface.
- 15 8. A closure according to any of the preceding claims, wherein said curl portion defines contact surfaces for said cover and locking means.
9. A closure according to any of the preceding claims, wherein a compound is placed between the cover and said curl portion so as to provide a tight closure.
- 20 10. A closure according to any of claims 6-9, wherein a compound is placed between the sidewall of the container and said wall portion of the cover so as to provide a tight closure.
- 25 11. A closure according to any of the preceding claims, wherein a compound is placed between the skirt and the sidewall of the container so as to provide a tight closure.
12. A closure according to any of claims 9-11, wherein the compound is attached to said cover or skirt.
- 30 13. A closure according to any of the preceding claims, wherein the cover comprises metal and/or cardboard and/or composites and/or glass and/or wood.
14. A closure according to any of the preceding claims, wherein the skirt is seamed to said cover.
- 35 15. A closure according to any of claims 1-13, wherein the skirt is injection moulded with said cover.

16. A closure according to any of claims 1-13, wherein the skirt is glued to said cover.
17. A closure according to any of claims 1-13, wherein the skirt is clicked on to said cover.
- 5 18. A closure according to any of the preceding claims, wherein the skirt is made of a resilient plastic, such as PELD, PP, PEHD, PET, PMMA, PA, elastomers or rubber.
19. A closure according to any of the preceding claims, wherein the closure and container is substantially cylindrical.
- 10 20. A closure according to any of the preceding claims, wherein at least a part of the locking means is detachable.
- 15 21. A closure according to any of claims 7-20, wherein the engaging rib comprises a first part and a second part, and wherein the engaging surface of a cross-section of the first part is bigger than the engaging surface of a cross-section of the second part.
22. A closure according to claim 20 and 21, wherein the first part of the rib is detachable.
- 20 23. A closure according to any of the preceding claims, wherein the closure comprises gripping means.
24. A closure according to any of the preceding claims, wherein the skirt consists of two or three or four or more individual skirts.
- 25 25. A closure according to any of claims 1-23, wherein the skirt extends continuously along the entire circumference of the container.
- 30 26. A closure according to claim 25, wherein said skirt comprises one or more peelable perforations extending transverse to the circumferential direction of the skirt.
27. A closure according to any of the preceding claims, wherein said skirt comprises one or more slits extending transverse to the circumferential direction of the skirt.
- 35 28. A closure according to any of the preceding claims, wherein at least a part of the skirt is detachable from the cover.

29. A method for manufacturing a closure for a container having a sidewall terminating in a peripherally extending curl portion encircling an opening to be closed, said method comprising the steps of:

- 5 - providing a non-plastic cover having a peripherally extending edge portion defining attachment part(s) for a skirt,
- providing a non-metallic skirt
- attaching the skirt to said attachment part.

10 30. A method according to claim 29, wherein the step of attaching comprises seaming the skirt to the attachment parts.

31. A method according to claim 29, wherein the step of attaching comprises gluing the skirt to the attachment parts.

15 32. A method according to claim 29, wherein the step of attaching comprises injection moulding the skirt to the attachment parts.

33. A method according to claim 29, wherein the step of attaching comprises clicking the skirt on to the attachment parts.

20 34. A method according to any of claims 29-33, wherein the step of providing the skirt comprises extruding the skirt.